



INFORMATION ON THE 2012 FEDERAL AVIATION ADMINISTRATION (FAA) MODERNIZATION AND REFORM ACT

By: Veronica Rose, Chief Analyst

DRONES

- The 2012 FAA Modernization and Reform Act requires the FAA to safely integrate civil drones into the national airspace by September 2015.
- FAA says it will not meet the deadline because of a series of complex technological, regulatory, and managerial barriers.
- "Ultimately drones must be integrated into the NAS without reducing existing capacity, decreasing safety, negatively impacting current operators, or increasing the risk to airspace users or persons and property on the ground any more than the integration of comparable new and novel technologies" (Michael Huerta, FAA administrator).

QUESTION

What are drones (unmanned aircraft systems (UAS))? How does the [2012 FAA Modernization and Reform Act](#) affect them?

SUMMARY

Simply put, a drone is an unmanned aerial vehicle controlled by an on-board computer or remotely by someone on the ground or in another vehicle. Although most often associated with military operations, drones have wide-ranging law enforcement and civilian applications, such as land surveillance, search and rescue, disaster response, and firefighting operations.

All drone operations are subject to regulation by FAA, which is charged with promulgating safety standards in the national air space (NAS). FAA issues certificates of authorization (COA) for limited drone activities in the NAS, after conducting case-by-case safety reviews. Commercial drones are prohibited, as are routine operations over densely populated areas.

Growing public sector and commercial interest in operating drones and increasing drone activities led Congress to pass the [FAA Modernization and Reform Act](#) in 2012 (PL 112-95, 126 Stat. 11). The act directs

FAA to develop and implement a comprehensive plan to safely integrate civil drones into the NAS by September 2015 and implement new standards for public drone operators. The act includes provisions describing the plan and rules the agency must create to address integration issues, restricting FAA's ability to regulate "model aircraft," and requiring the creation of six drone test sites. It also includes mandates to streamline the COA process for government and public safety agencies.

As of February 2014, FAA had met only eight of the act's 17 UAS requirements. FAA says it has "made progress meeting the act's UAS provisions, [but] it has determined that it will not meet the September 2015 deadline for UAS integration due to a series of complex technological, regulatory, and managerial barriers" (U.S. Department of Transportation inspector general, Feb. 5, 2014, [statement before the Committee on Transportation and Infrastructure, Subcommittee on Aviation](#)).

Privacy advocates have expressed grave concerns about drones and the technology's potential to infringe on Fourth Amendment rights. In a 2011 letter to FAA, the American Civil Liberties Union (ACLU) stated that "[w]e need a system of rules to ensure that we can enjoy the benefits of this technology without bringing us a large step closer to a "surveillance society" in which our every move is monitored, tracked, recorded, and scrutinized by the authorities" ([Protecting Privacy From Aerial Surveillance](#), ACLU report, published December 2011).

DRONES

A drone (historically and variously called "unmanned aircraft," "unmanned aerial vehicle," "remotely operated aircraft," or "remotely piloted vehicle") is an aerial vehicle designed to fly without a human pilot on board. Drones vary in size, shape, weight, speed, performance characteristics, technical and flight capabilities, how they are powered, and how high they fly, among other things.

FAA does not use the term drones, preferring the term UAS to "emphasize the fact that separate system components are required to support airborne operations without a pilot onboard the aircraft." [PL 112-95](#) defines "UAS" as an "unmanned aircraft and associated elements (including communication links and the components that control the aircraft) required for the pilot to operate safely and efficiently in the NAS." It defines an "unmanned aircraft" as an "aircraft operated without the possibility of direct human intervention from within or on the aircraft" (*id* at § 331). The term "unmanned aircraft" encompasses all classes of airplanes,

helicopters, airships, and powered-lift aircrafts without a pilot on board ([Integration of Civil Unmanned Aircraft Systems in the National Airspace System Roadmap](#), First Edition, 2013, 1.3).

Current FAA policy prohibits drones, public or private, from operating in the NAS without specific authority from FAA (FAA, "[Unmanned Aircraft Operations in the National Airspace System](#)," *Federal Register*, 72(39) February 13, 2007, 6689-6690)). A public drone is one operated by the military; academic institutions; or federal, state, or local governments. A private drone is one operated by a private entity.

Drones operated by public entities must have a COA, authorizing their use in special circumstances. Drones operated by private operators (also called civil drones) must have an FAA special airworthiness certificate, which limit operations to research and development, flight tests, and crew training. Commercial uses of drones are prohibited (see **Arctic Sites** below).

The certificates set requirements and limits addressing safety issues, such as restricting the airspace where the drone can fly to prevent accidents between drones and manned aircraft or other drones. Notably, they do not address privacy issues (see [FAA Notice, N 8900.227](#), effective July 30, 2013).

The certificates for both public and private drone operations are issued on a case-by-case basis. Model aircraft operations below 400 feet away from populated areas are essentially unregulated, although FAA encourages voluntary compliance with safety standards ([FAA Advisory Circular 91-57](#)).

PUBLIC LAW 112-95

The proliferation of drones and their potential uses have raised safety, privacy, legal, policy, and other concerns. The pace of regulation has lagged behind the technology. Concerned with the pace of integrating drones into the NAS, Congress passed [PL 112-95](#), which contains 17 UAS provisions. The act establishes specific requirements and deadlines for integrating drones into the NAS (see Appendix 1). We summarize the major provisions below.

Civil Drones

The act requires the FAA to develop, and submit to Congress, a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the NAS by September 30, 2015 (§ 332(a)(1) & (a)(4)). Among other things, the plan must recommend or project:

1. how future rulemaking will define acceptable standards for operating and certifying drones;
2. operational standards for drones (with a focus on “sense-and-avoid” capabilities to prevent midair collisions between drones and other drones or manned aircrafts);
3. standards, including licensing and registration, for drone operators and pilots;
4. the best methods to enhance the technology to achieve safe and routine operation of drones in the NAS;
5. a phased-in approach, including a timeline, for integrating civil drones into the NAS; and
6. the best way to ensure the safe operation of civil and public drones in the NAS (*id.* at § 332(a)(2)).

The act also directs FAA to promulgate rules implementing the plan and rules governing the civil operation of small drones in the NAS (*id.* at § 332(b)).

Five-Year Roadmap. The act directs FAA to approve and make available a five-year roadmap for introducing civil drones into the NAS (*id.* at § 332(a)(5)). FAA published this roadmap in November 2013 (see [Integration of Civil Unmanned Aircraft Systems \(UAS\) in the National Airspace System \(NAS\) Roadmap](#)).

Public Drones and Commercial Drone Use

The act directs FAA to enter into agreements with appropriate government agencies to simplify and shorten the COA process for public drones (*id.* at § 334(c)(1)). FAA must “develop and implement operations and certification requirements for the operation of public drones in the national airspace” (*id.* at § 334(b)). These standards must be in place by the end of 2015.

Arctic Sites and Commercial Drone Use

The act requires FAA to develop a plan and initiate a process to work with relevant federal agencies and national and international communities to designate permanent areas in the Arctic where small drones (those weighing less than 55 pounds) may operate 24 hours per day for research and commercial purposes (*id.* at § 332(d)). FAA has designated the sites. (As of March 7, 2014, FAA reports that it has certified two UAS models for commercial use in the Arctic.)

Small UAS

The act requires FAA to determine if some drones because of their size, speed, operational capability, proximity to airports and populations centers, and operation with the visual line of sight are capable of operating safely in the NAS before the completion of the plan and rulemaking required by the act. The agency must determine whether these particular drones do not create a hazard to users or pose a threat to national security and therefore may not require FAA certification or authorization to operate (*id.* at § 333).

Test Ranges

As part of its efforts to integrate public and civil drones into the NAS, the act directs FAA to establish six test ranges (*id.* at § 332(c)(1)). FAA must designate airspace for the operation of both manned and unmanned flights, develop certification and air traffic standards for drones at the test ranges, and coordinate with both the National Aeronautics and Space Administration and the Department of Defense during development. The test program, scheduled for five years, must address both civil and public drones (*id.* at § 332(c)(2)).

In December 2013, FAA selected the following test site operators: University of Alaska, State of Nevada, New York's Griffiss International Airport, North Dakota Department of Commerce, Texas A & M University at Corpus Christi, and Virginia Polytechnic Institute and State University (Virginia Tech).

Model Aircraft

The act bars the FAA administrator from regulating model aircraft if the owner takes basic safety precautions. It expressly states that the FAA administrator "may not promulgate any rule or regulation regarding a model aircraft, or any craft being developed as a model aircraft" under specified circumstances (*id.* at § 336(a)).

This prohibition applies to model aircraft less than 55 pounds that do not interfere with manned aircraft and are flown in accordance with a community-based set of safety guidelines. Additionally, the aircraft must be flown within the operator's line-of-sight and be used strictly as a hobby or for recreation. If flown within five miles of an airport, the operator must notify both the airport operator and air traffic control tower (*id.* at 336(a)(5)). Although FAA cannot write regulations governing these aircraft, it may pursue enforcement actions against model aircraft operators who endanger NAS safety (*id.* § at 336(b)).

FAA COMPLIANCE WITH PL 112-95

As of February 2014, FAA had completed only eight of the 17 UAS steps in PA 112-95, including publishing its five-year roadmap (see [Integration of Civil UAS in the NAS Roadmap](#)).

FAA says it faces significant technological, regulatory, and managerial obstacles in its efforts to address UAS-related safety risks and successfully integrate UAS into the NAS. These include longer term challenges in developing adequate UAS technology and establishing certification standards and regulations, as well as near-term air traffic control and oversight issues. Also “drones are more complicated to regulate than conventional aircraft since they vary in size and can fly longer than airplanes.”

FAA has indicated that it will not meet the September 2015 deadline for safely integrating drones but will complete some parts of integration—most likely for small UAS. FAA’s five-year UAS Roadmap contains target dates for the agency’s future integration efforts, but FAA officials stated that the target dates do not represent “commitments.” It remains unclear when FAA will complete UAS integration.

PRIVACY CONCERNS

Many concerns have been raised about the use of drones, especially their use by government entities. Chief among them is privacy. Privacy advocates and civil liberties groups acknowledge the benefits of many common uses of drones but fear that they may be used to spy on American citizens and used in other ways to infringe on fundamental Fourth Amendment privacy rights. They say the same technology that drones use to track and strike terrorists in the Middle East will be used to view crime scenes and track suspects on American soil.

In a [report](#) released December 15, 2011, the ACLU expressed concern over the prospect of intrusive aerial surveillance without proper safeguards. According to the ACLU:

Based on current trends—technology development, law enforcement interest, political and industry pressure, and the lack of legal safeguards—it is clear that drones pose a looming threat to Americans’ privacy. . . . the prospect of cheap, small portable flying video surveillance machines threatens to eradicate existing practical limits on aerial monitoring and allow for pervasive surveillance, police fishing expeditions, and abusive use of these tools in a way that could

eventually eliminate the privacy Americans have traditionally enjoyed in their movements and activities ("[Protecting Privacy from Aerial Surveillance](#)," ACLU Report, December 2011, pp. 1 & 11).

In November 2013, the FAA released a privacy policy that applies to the UAS test sites. Among other things, it requires site operators to:

1. comply with all local, state, and federal laws concerning privacy and civil liberties;
2. require people operating unmanned aircraft at the site to have a written plan for how they will use and retain any test data acquired;
3. have a written privacy policy available to the public; and
4. conduct an annual review of their privacy practices that allows for public comment ([Final Privacy Requirements for the UAS Test Site Program](#)).

RESOURCES

American Civil Liberties Union, *Protecting Privacy from Aerial Surveillance: Recommendation for Government Use of Drone Aircraft*, December 2011.
<https://www.aclu.org/files/assets/protectingprivacyfromaerialsurveillance.pdf>, last visited April 28, 2014.

Federal Aviation Administration, Advisory Circular 91-57, June 9, 1981.
[http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/1acfc3f689769a56862569e70077c9cc/\\$FILE/ATTBJMAC/ac91-57.pdf](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/1acfc3f689769a56862569e70077c9cc/$FILE/ATTBJMAC/ac91-57.pdf), last visited on April 29, 2014.

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Federal Aviation Administration, *Final Privacy Requirements for the UAS Test Site Program*, November 7, 2013.
http://www.faa.gov/about/initiatives/uas/media/UAS_privacy_requirements.pdf, last visited April 28, 2014.

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http://www.faa.gov/about/initiatives/uas/media/UAS_Roadmap_2013.pdf, last visited April 28, 2014.

Federal Aviation Administration, Notice 8900.227, July 30, 2013.

http://www.faa.gov/documentLibrary/media/Notice/N_8900.227.pdf, last visited April 29, 2014.

Federal Register, "Unmanned Aircraft Operations in the National Airspace System," February 6, 2007.

http://www.faa.gov/about/initiatives/uas/reg/media/frnotice_uas.pdf, last visited April 29, 2014.

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[http://www.faa.gov/regulations_policies/reauthorization/media/PLAW-112publ95\[1\].pdf](http://www.faa.gov/regulations_policies/reauthorization/media/PLAW-112publ95[1].pdf), last visited April 29, 2014.

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